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CAREER OF THE FUTURE ARCHITECT

BY RICHARD J. NEUTRA

I thank you for your friendly invitation to write for your periodical. I have previously followed the request to speak at great universities of this country, as I have done elsewhere around this troubled globe, to meet the young men in our profession. We are all concerned with the physical setting for most human action and rest. Our species no longer lives in the jungle, and even our wisest men sit no longer under mango trees in undisturbed contemplation.

Students of our profession from Istanbul, to Manila, to Milan, to Caracas, naturally see no clearer way than their elders, the adult architects, to go through their life's careers. There are so many different things published in magazines, issue after issue. We can surely not blame a young man for being befuddled, where all wise men are in doubt.

Can words clear things for us, bring them to convergence so that ideas and motives begin to jell? Young men must know about their future; years to be filled with a pursuit which is steady and deeply satisfying, because filled with responsibility - a pursuit which they themselves and their public will find worthwhile.

To write an article or a book is to put together words. Words can be self expression or service to others. Perhaps both of these chances can be fused into one.

More than a generation ago I started my career practically alone in this entire Western Hemisphere, where the work of Frank Lloyd Wright was unappreciated and resented. I had nothing to show, not even comparable work of anyone else, who was acceptable to a possible client. Nothing of the sort was at all known to the human beings of America from Montreal to Buenos Aires. Look at the architectural and home-builders magazines of 1920. The relativity of my effort, or the lack of it, will become awfully clear to you, as well as my terrific loneliness, as you make this interesting little excursion into the past.

When you ask your librarian for those old issues of the powerful magazines, you will suddenly see the slim chances of a young man of that time to do something beyond and outside the most painfully misunderstood "convention". Perhaps you will find those reams of illustrations ridiculous, but this they were surely not. They were frightening and formidable to a young man, who wanted to start a career and support a family, by making a clearing in these woods, as a pioneer.

For me the woods were not, in any single instance, cleared by windfalls of happy patronage. This makes a career like my own much better understandable, much less accidental. Had I had "contacts", married the niece of the mayor, sprouted "connections" easily in the upper or even the intellectual brackets - maybe all this would have clouded the issue: how to get started with something new of consequence. The every day surrounding scene is the background against which the work of single-handed persons are best silhouetted, if they should become helpful and instructive.

I had no one to fall back on, no funds whatever, no examples on a magazine page to show, nobody who was interested or wanted to understand the thing in which I believed. How could I possibly make a career, which slowly but finally has brought acceptance to my approach and its broad development. If one could see through this, much might be gained for future careers in architecture, it would seem.

I glance now, myself, at those old magazine issues - and you should do it also if you care to follow this train of thought. It surely looked like living in a hopelessly icy atmosphere, alone among polar bears.

I then fell on the idea, that human beings would become friendlier, if I understood them. Of course, to "know man" has been a philosophical advice as old as the hills. You could not serve man, unless you know him. You could not provide a polar bear with a setting, with a habitat in a zoological garden, unless you know and loved and began deeper and deeper to understand polar bears.

In those early days there had been no persecution or turmoil in Europe and I came to America, not because of bitterness, but because of cosmopolitan conviction.

I set to work and learned to understand the language of the beings surrounding me. Having a warm heart myself, I supplemented the conversation with a friendly facial expression of sympathy and slowly earned a little of the same from others, in spite of my designs, which looked more like Lever Bros. than Woolworth, that great gothic monument of those days.

But above all, I fortified and familiarized myself passionately with current research and progressive information. True, I also experimented with information on laminated glass, the economics and techniques of riveting and welding, open truss joists, stress resistance of moulded sheet steel, brand new prestboard and metal window standards. The information, that fascinated me more and more, was not so well advertised. I found it magnificently plentiful, as it flows from the research papers of several hundred first-rate journals on physiology and human biology - and it helped me understand much better my own clinical experience with people.

From New York to Moscow, these periodicals are publishing annually the most pertinent facts about how man, woman and child can be better understood in all the stunning pictures of organic and human functioning. It's almost a brand new fascinating science, no second to electronics - in fact often quite related to it.

Architects, no matter how you look at it, cannot be happy in their profession if annoyed by man, as an interferer in their abstract inspiration. They will and must find the deepest and most stimulating inspiration in him and his responses, which are more sensitive than those of any machine or material. The strains and stresses in him, their distribution and alleviation are every bit as interesting as in a space frame, goedesic dome or other ingenious engineering feat.

I have experimented and in my own practical way pioneered in engineering and my enemies then used to call me a mere engineer, which in the twenties was a word of calculated insult in architects' circles. It is now hard to believe that this should ever have been so! But it can be easily checked in those old back numbers of magazines, filled with "historical" reminiscences. Now, we more frankly enjoy and proudly express, without looking backward, that we live in an age of unprecedented power. A friend in San Francisco told me what tremendous feeling of power he has during rush hours, when his motor breaks down on the bridge approach and he holds up twenty-five thousand cars for forty minutes. No, we no longer look back. We busily commute to and from our wives, keep the Hi Fi turned on in a bottleneck, or have the best ideas at the steering wheel.

Now then, what about the role of this well engineered technology, what about the assemblage of brand new fabricates from plastic floor tile, well marbled for our home, to those two-tone cars, jamming the freeway entrances, and three door wall-hung refrigerators with built-in Geiger counters plus television, - an exciting story (continued on page 146) in between full page ads?

What is the safe role of the architect in all this as an environmental determinant of mankind?

The universe, our first surroundings, tall, handsome, or really pretty chaotic and originally unmanaged by us is, we know, very preponderantly inorganic. So much so, that most scientists would agree: Organic life is limited to only a tiny fraction of this infinite expanse, perhaps only to our petty planet.

In other words, the organic is a very smallish and late insert in the inorganic world.

But man himself a part of this organic insert, has for a hundred thousand years started to adopt and to produce inorganic tools and accommodations. This is the technological insert in that organic insert, we spoke of before. And this rather new man-made inorganic core, lately - I mean during the century or two of industrial revolution - has been growing by leaps and bounds. The inorganic stuff in our midst is mushrooming like a hydrogen bomb which incidentally is part of it and of our large scale sterilizing production.

Once more, here is the picture: A huge inorganic universe. A small insert in it of organic life, existent and highly evolving, for only a few billions of years. And now within this for a mere few thousand years, the cumulative inorganic technology of man, ever more and ever quicker inflating itself, pressuring organic life, so to speak, from the inside.

Man and all his organic ancestry has survived by adaptation to the outer universe. At present he has no time to adjust himself safely and slowly to the inner inorganic collisions and pressures produced by his own explosive inventiveness. Organic adaptation takes a long time, but the patent office in Washington builds annually a new wing to file the applications pouring in, which commercialization has already started to exploit on the installment plan basis.

The magazine pages are filled with color cuts of the "new" to buy, and the editorial pages interspersed with all these brilliant offerings, bring the new fall and spring fashions in ladies' apparel and all the other arts, architecture included.

Unfortunately architects deal still with fairly long range investments. They lose credit with their customers, they lose the community's confidence, when they slip into the short range fashion business.

The young man in architecture needs to have a long, steady perspective in front of him, a lifetime of consistent progress, not a breathless check-up and pick-up of fashion appeal in the novelty magazine. The millinery business may rightly be different. He, who enters it, should have open eyes for what it takes and yields.

At any rate, we have long enough said: We need a new architecture, "because we have a lot of new materials." We should once recognize that we have not yet truly satisfied the oldest human needs, in fact, may do less so as we go along with all our neon signs, excavation machines and metallic herds of new models, among which we can't find a resting place, in spite of their "superb, knobby printed, plastic covered rubber-foam uphostery. "A parking place is where someone else has parked his car." There is no anchorage for the soul, because we have lost the feel, pay no heed, and continuously ignore all valid current data on how our million sense receptors - no longer five senses as for Palladio - take in the world.

How our organic and nervous system functions, would give us the best clue to design. We are in this sense functionalists, "practical" and "progressive." We architects of to-morrow can draw on new and penetrating knowledge of how a human being responds to all the millions of stimuli. We had better stop innocently toying with them. How many inner balances do we upset, how many life processes, subtly coordinated by and for life, do we harm instead of furthering them? 'Delight' is after all not something apart from natural "utility", and more than comfort, happiness itself is laid in our hands.

This is at bottom the job of the architect, brimful of satisfaction and chances of self-expression.

Did I speak here too much of something like scientific curiosity, mixed into a "pure art"? No one in our profession - midst our famous "age of science" - seems even half as curious and devoted to scientific penetration as were the methodic artists of the Renaissance, each of whom wrote a book, chewing through the latest unearthings of antique science, and the additions of the age in anatomy, Euclidian proportions and descriptive geometry. A hundred years after Gauss and Lobachevsky we have other, still more contemporary findings to be excited about than Euclid - and this is not to smear the gentlemen. But because we are architects, we are activated by the new discovery of man, our client. We are beyond all verbal levels and the realm of mere words, more than just caterers to human senses and brains. They have a stupendous intake, but we must not just pour it on. Why rehash old fuzzy phrases, which may have been fine when they once upon a time seemed to express discoveries. Now they are lukewarm cliches, hard to revive. Like men, in all the past, let us be enthusiastic about our new chances in methodic observation which, for deeper and sharper penetration, cast aside vaguer, speculative concepts that may have well served the fifth century before Christ or the eighteenth after Him.

Do we go on speaking of architecture as "a space-art" and as "frozen" music, when every physiology student knows that all our responding receptors act in time, in space time? Once that venerable slogan may have been great, today it is a burdensome cliche, barring a young man from clearer, more promising sight into his client's essential make-up.

His client is man, the species, and man the individual. Neither is a nuisance, but the most exciting phenomenon to deal with - more so than plexi-bubbles on the roof and electronically glued wizardry. Technology surely has its place and it has its well-trained professions dealing with its manifold divisions. Young architects are mere amateurs facing modern stress analysts, like the great Dischinger, first calculator of space frames or his great assistants Finsterwalder and Tadesco, perfecting precise, foolproof methods for the premises or geniuses of execution and prefabrication, like Freyssinet in France, Nervi in Italy and the great Edoardo Torroja in his Instituto Tecnico in Madrid. Buckminster Fuller with his broad outlook and Felix Candela with his amazing leapfrog jump over all sedate mathematical approach - in which he nevertheless is a master - become something like science fiction to the young architectural student. He listens or reads; he has no hope of being more than an interested layman. But this is no time like the one when Henry Ford, against best advice, experimented in his backyard with an innocent and frail model of a combustion engine and built the early automobile from bicycle accessories. The new jets are not mocked up, calculated, tested by Wilbur and Orville Wrights.

Architects are at best third rate specialists in engineering. If they also are not the fashion experts, cellophane packagers and and beauticians - as what will they pass during a life time ahead of them before their public? On what services will they be appreciated and compensated and honestly live and sustain their practice, their private life, their family, - to be quite practical about it?

When my son studied architecture, I pondered these questions for the thousandth time in my life. What is our niche and assignment, not already filled by some other more competent party?

Engineers deal with comparatively big energy transactions, tons per square feet, kilowatts. They deal with inorganic problems. We architects have no rivals and betters, if we only know how to deal with the minimal but stupendously important energy transactions in nervous systems, in the organic systems of man, woman and child. Research physiologists furnish us valuable observations, but we can, must and do practice a clinical know-how, like a bedside physician who is undoubted in his power to supplement, - sometimes with lightning speed, or a lot of practical case histories - the labman in his patient pursuit. Intuition divorced from systematic observation is in no field characteristic for this age. Perhaps it never existed except in some fictitiously distorted anthropology. Surely some proud intuition and sensational production might be a wrong guess after all. It needs a post mortem check up.

Some "arbitrariness of regularity" might be as unsafe as an "arbitratiness of irregularity" in a world where fatigue is one of the basic organic phenomena, as habit, easy going along with the same old dynamics, is the other.

Following the old path beaten by long conditioning and experiencing on one hand, and getting tired of it and of things too often experienced, is not a pair of "psychological" factors. It is a basic, ubiquitously observed fact in organic life from the first drop of plasma to the venerable human brain, which by light years beats all glorious twentieth century electronic automation and eighteenth century automaton clockwork.

An architect of the future will know an immense lot, when he talks of "Vision". The breadth of taking in a designed space, by peripheral vision, taking in its depth by binocular vision, its stimulations, effective through color vision, which has different ranges and deficiencies in the two sexes and in a million individuals, its illuminative intricacies, effecting day-and night vision. A popular hand book on the lovely, receiving, fast moving human eyes, coordinated in pairs, which sit in our skull's sockets so peculiarly different from a horse's eyes, and are so strikingly and differently orientated from the light reception organs of a phototaxis bee or night butterfly - will open a terrific vista to the designer. It's a vista into what that vision is to which we cater so glibly by coarse rule of thumb, or without any rule at all.

In fact while the vision sense is called such, it comprises, as we have alluded above, a whole vast cluster of sensorial functions, all rolled in one, and again inseparably connected with the simultaneous workings of all the other senses - like, to take only one single example, - the acceleration sense in the inner ear. It most promptly reports to us whether we tilt our head while we look up to that looming cathedral spire, or peep down through a floor hatch into the elevator shaft of the Empire State Building. It surely is a very different sensation, modified extravisually, quite apart from what the eyes do for us.

Architecture is taken in as a million of sense impacts, all fused by what physiologists call "stereognosis", endless perpetual and intimate sensorial combinations.

Built into the skin and inside our skin, the muscle packs, too, are sense-equipped to report to us; while we turn and walk through the arches of the Mosque of Cordova, when we leave the level to step on a ramp, climb a stair, get our foot soles icy cold by thermal losses on the stone floor. We feel the draft from the sacristy door, cooling our surface by evaporating the tiny sweat droplets over each pore of our skin, we hear reverberations of our steps on surrounding stone walls differently from what we experience in the, to the eye, most faithfully similar Hollywood stage setting of studio board.

And there, also the smell is quite different from that which is exhalated by the microbiotic life settled on old masonry.

We could go on and on talking of what environmental impacts are, in nature and in a man-made, a well or poorly designed setting. What an arbitrary restriction to say that architecture is a "visual art", when this word is so poverty stricken empty compared with that of implications it could comprise today in a sympathetic and penetrating understanding.

And is it at all just a "visual" art when every truly informed person opening his laboratory door into our common corridor could prove to you that the world of man is not a department store with vision, camera shop and TV on the fourth floor, and sport goods, camp equipment, gravity sense and locomotor perception on the fifth?

No, the world and the landscape is one, in spite of the eighteenth century departments of "rationalism" and "practical reason" full of "emotional impurity". Man is to us an indivisible entity with a multitude of senses - every week brings here a new discovery - but a sense of beauty has never been discovered. It is just a rhetoric phrase, meaningless in this world of ours which is a little more precise, where harmonized coordination of manifold reception and inner elaboration will have to be patiently studied. Again, this will serve us better than tear sheets or fast reprints of old cliches that we are or ought to be for beauty and gainst ugliness and sin. Yes, of course we are, nd we shall perish midst our turmoil of celerated progresses, that are so eminently practical, tilitarian, rub off each others duco finish, dentng even smashing each others gorgeous chromelated trim and delivering last year's crop of our ivilization to wrecking lots that surround our lives n all sides.

ife is ancient, must be recognized as the most ractical thing in the world and thus preserved y all means. Designers of its housing, archiects, community planners of America, have the nost responsible job, to keep nine million coationals of their know-how country from the anual waiting list of psychiatric waiting rooms and revent other distressing organic disorders. To e and remain human, to design the biologically earable and protest by doing against the perilous mischief of the "practical operator" will put the oung and future men in architecture in an esteemed and rightly recompensed position. Ultimately, he architect will be well defensible by a current knowledge on what good and what harm can be done by his effort.

"Doing good" and "doing harm" are expressions usually not connected with what is considered "esthetics". And esthetics, like morals, are a discussion subject, on which even neighbors feel it is their privilege and honor not to agree because they argue from different premises. This sort of discussion is for the young (and the old) architect the thinnest ice, and he breaks through it promptly into a bottomless sea of weird "likes and dislikes". There he drowns in helplessness.

The young architect, as the young physician, must comprehend, - mostly through self-training how to direct a client, or even prospect - conversation at different stages during the evolution of the project. Surely, he must draw with ease. But graphic presentation to a lay-person has its pitfalls. It might be too convincing and then quieting constructive comment, or it may with all its skills still be incomprehensible to an untrained eye. There are many people, who are verbally much more accessible than by graphic communication.

Like a physician, the architect needs bedside manners and verbal technique to ellicit pertinent, sometimes unsuspected information for his diagnosis, but also to alleviate emergent antagonisms. They must be controlled if client confidence should not suffer at an early stage and spring a leak which is hard to repair and might forever impair the creative performance, lasting and noticeable for an amortisation period of thirty years.

The firm of Iktinos and Kallikrates had the confidence of Pericles, this is visible on the Parthenon after twenty-five hundred years. The "budget of confidence" on the part of the client, his willingness to invest his trust wholeheartedly in a professional, holds more promise for the project than the financial budget or the investment of dollars and cents.

To steer client conversations clear of emotional controversy means to avoid the beartrap of esthetical dispute or answering their likes with counter-likes.

Speaking of my own career, I should have perhaps mentioned that the attitude of the physiologist truly does alleviate the emotional hardships of controversy on likes, taste and beauty. To know how the eye, in its manifold functions, responds to proposed stimuli, makes an architect a professional and the weight of his opinion will be increased if he sympathetically deals with associations (cerebral eradiations) which his design is apt or intended to evoke. A conversation kept on this level, I have found in thousands of cases, never suffers derailment into an argument. And argument be it, now lost or won, tends to whittle away a productive client relationship and its creative potential.

Creation and creativity is what is the goal of an architect's career. Intuitive power will always be at the core of it, but it has always drawn, and will draw tomorrow, on current wisdom and method.

NOTE: Ideas in this article have been much more carefully evolved in the essays of two books: "Survival through Design", Oxford University Press; and more recently and illustrated in "Life and Human Habitat", Alexander Koch Verlag, Stuttgart.

MISCELLANY

An interesting library of architectural slides has been compiled by J. H. Acland, designed particularly for the architectural history instructor. for a catalogue write to J. H. Acland, c/o School of Architecture, University of Toronto, Toronto, Ontario, Canada.

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"Architectural Rendering" by Albert O. Halse deals with techniques of contemporary presentation. It is published by the F. W. Dodge Corp.

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"The Open Window" is a film showing a journey through the country side of five lands as their great painters have seen it during five centuries of the development of landscape painting. We have received lists of interesting educational films and suggest those desiring complete information write to International Film Bureau, Inc. 57 East Jackson Blvd. Chicago 4, Illinois.

"Washington, D.C. 2000 AD"

A series of thirty multi-colored drawings showing the central area of Washington, DC as it might look by the year 2000 were prepared by a team of fifteen graduate class members in Urban Renewal at the School of Architecture, Columbia University.

The graduate students, specialists in all phases of urban redevelopment, worked under the direction of Dr. Harry A. Anthony, associate professor of Urban Planning at Columbia. They studied "Metro-Center," the heart of the nation's capital, defined by the National Capital Planning Commission as "the future center of the metropolitan region of Washington." It consists of an area of approximately six square miles and includes the downtown retail business area, George Washington University, the Capitol, the White House, most in-town government buildings and other governmental, cultural, civic, entertainment and residential facilities.

Their plans provide for an anticipated growth of existing facilities in the project area and recommend new and specific facilities such as science and tourist centers.

Their proposals for redevelopment include:
A rail transit system built in four stages from existing commuter facilities to a downtown subway loop.
Express freeways based on the Inner Loop plan, with parking garages near transit stops.

Use of the Mall as a pedestrian promenade, with museums and government buildings between the Capitol and the Washington Monument.

Development of an East Mall by the year 2000, to include a complex of government buildings, a performing arts center, a science center and a new university.

Cutting of downtown business areas into superblocks with traffic routed around their edges and parking and truck delivery areas under central pedestrian plazas.

The study was sponsored by the Junior Chamber of Commerce of Washington, D.C. The National Capital Planning Commission and the Metropolitan Washington Board of Trade cooperated in the project.

* * * * *

The Independent Laboratory and The Trade Association, sent a pamphlet in which was contained the following:

"The Americans of all ages, all conditions and all dispositions constantly form associations. They have not only commercial and manufacturing companies in which all take part but associations, of a thousand other kinds, religious, moral, serious, futile, restricted, enormous or diminutive. The Americans make associations to give entertainments, to found establishments for education, to send missionaries to the antipodes. Wherever at the head of some new undertaking you see the government in France or a man of rank in England, in the United States you will be sure to find an association."
Alexis De Tocqueville - 1805-1859.
We do not know whether the above statement was satirical, complimentary or merely factual. Monsieur De Tocqueville's observation, now over one hundred years old, still retains several essential truths for us. In any case, we think that the habit of Americans of banding together in groups to defend and advance their interests and well-being is a continuing expression of the successful idea of association and union which created and preserved our nation.

* * * * *

"In Defense of the City" - A Columbia University professor says that exponents of current thought that cities are obsolete and that their disappearance is inevitable, overlook the fact that "the city has always been not merely the vessel, but the actual generator of civilization."

"It is not at all accidental that such words and concepts as Civil, Civilized, Citizen, Urbane, Urbanity, cluster around the word and concept City," wrote James Marston Fitch, associate professor of Architecture, in the Fall issue of the "Columbia University Forum", a quarterly journal of fact and opinion. "Urban experience is their point of origin," he writes. "They represent mankind's distilled experience with the city as a special instrument of social organization. The city has always been the lodestar of farmer, herdsman, hunter, sailor. It offered them steady employment, and the food, clothing and shelter that were statistically so chancy elsewhere. It offered them paved streets, lighted taverns, buzzing markets, instead of barnyard mud or stormtossed ocean nights. It promised them music, dancing, theater and spectacle. Even more precious, it gave them relative safety from war and sanctuary and asylum for dissent.

"But beneath all of these was the city's most splendid gift: a range of choice, an entire spectrum of possible lines of action. This was the lodestar that pulled them."

Professor Fitch concedes that the mechanization of American life in all its major aspects has almost equalized the historic disparity between the material conditions of urban and rural life.

"Mechanication has also made possible the decentralization of manufacturing, thereby introducing new modes of work and thought into the rural hinterland." .....

"These shifting populations and processes have, especially in recent decades, left ugly vacuums and imposed dreadful strains upon the physical and social fabric of the central city -- and the resulting confusion and squalor have driven further sectors of the population out of the suburbs, even though their economic and cultural focus remained in the central city."

"But this is a far different thing from declaring them 'obsolete' and rejoicing in their dissolution." ......

BOOKS

"Methods of Regional Analysis" - An introduction to Regional Science by Walter Isard, Chairman of the Department of Regional Science and Professor of Economics and Regional Science, University of Pennsylvania, is now ready for use in Fall classes. It is published by John Wiley & Sons, Inc. 440 Park Avenue South, New York 16, N.Y.

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For those interested in housing, the Federal Housing Administration has issued booklet FHA No. 470 listing the technical studies prepared by them.

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"Primitive Shelter" by Cardwell Ross Anderson is available from the University of Kansas Publications, Lawrence, Kansas. This bulletin No. 46 is a study of structure and form in the earliest habitations of man.

* * * * *

One of the most fascinating areas in the field of architectural metals can be found in the historical development of ironwork patterns. According to early records, the decorative application of iron-work could first be found in such work as door hinges that developed into such elaborate creations that their primary purpose became secondary to their beauty.

The 12th century slype-type door from St. Albans Abbey (England) is an early example of an evolution toward a voluptuous pattern becoming almost a grille against a door.

The ironworkers' craft can trace much of its development to France, because it was in this country that the wide distribution of ironwork patterns was first achieved. Several of these French publications influenced the evolution of the English style, which is more familiar to American architects.

Now, a remarkable collection of traditional ironwork patterns is presented in a newly published book, "English Decorative Ironwork, 1610-1836," by John Harris. This handsomely printed and bound volume consists mainly of 154 plates, reproducing the classic pattern books on which American craftsmanship itself was based. In addition to the plates, a brief history of the development of the ironworkers' trade is presented.

CONTROL OF LIGHT KIT

We have received a booklet giving details of a kit that has been developed to demonstrate various optical principles for teaching purposes, by the Holophane Company, Inc. It is prepared with the lighting and power industry principally in mind, but as equipment of this sort for college use generally runs into several hundred dollars expense, Holophane is offering the kit to the colleges and universities as a public service and making it available for less than half the actual cost or $60. per kit. To order a "Control of Light Demonstration Kit", write directly to Holophane Company, (Illumination Service) 342 Madison Ave., New York 17, N. Y.

ENVIRONMENTAL ENGINEERING

Undergraduate and Graduate Study at R. P. I.

Every person must, for survival have an adequate supply of wholesome, safe air, water and food, and must be provided with heat and shelter.

For efficient productivity one must also have comfort, convenience, economic independence and freedom from disease.

Each individual contributes to air and water pollution and creates demands upon natural resources for food production, materials for heat and shelter, and for the disposal of wastes.

These demands are intensified wherever people congregate. Conditions are further complicated by industrial and community activities.

Modern patterns of living create various environments; the individual or home environment; the working or industrial environment and the community environment. The latter is associated with the overall environment of larger areas such as the county and State and finally the national environment.

Advances in both science and technology have made more effective environmental control possible.

The services of educators, engineers, chemists, physicists, biologists, ecologists, and other professional groups are urgently needed. The adequate solution of the complicated problems of control of the modern environment demands the close cooperation of these groups.

The engineering member of this group must not only effectively apply the principles of his own profession but must be able to communicate with his associates on a professional basis. He must be interested in and be able to work with people.

Modern practice in environmental control is concerned with the creation of the most favorable environmental conditions which can be attained as well as the prevention of disease.

A New Curriculum: Rensselaer Polytechnic Institute has, after three years of study by a campus-wide faculty committee, established a new curriculum leading to the degrees of Bachelor of Science in Environmental Engineering and Master of Science in Environmental Engineering. The objective of the new curriculum is two-fold.

Its first objective is to provide for an educational experience based upon a strong background in science. This will prepare the individual for service in the engineering aspects of the modern practice of control of the environment as a whole.

The second objective is to prepare the student for effective work on the graduate level in one or more of the specific areas of interest. A greater depth of study within a particular area of special interest is also made possible by the choice of electives.

Required courses and suggested electives are shown in the current Rensselaer Polytechnic Institute undergraduate catalogue.

The Environmental Engineering curriculum provides for career opportunities in many fields some of which are described below. Positions in these particular fields are available in the teaching profession, industrial organizations, local, state and federal health organizations and the world health organization.

Air Pollution - Conduct field surveys to determine and classify various sources of pollution and obtain adequate samples for the separation and analysis of polluting substances. Direct research to deterimine the characteristics, quantities and reactions of pollutants in order to establish relationships between pollution and atmosphere conditions.

The control of air pollution is a modern problem having both economic and health significance. The current economic loss in the form of damage to crops, buildings, materials and depreciation of property value due to unabated air pollution is estimated to be $1,500,000,000, annually. Even though many examples exist which show the menace to health, its direct effect and potential danger has not, as yet, been fully established.

Radiological Health - Participate in research to determine techniques for the control of radiation hazards; for methods of determining radioactive contamination of water and food supplies and the means by which such contamination may be reduced or removed; for methods of safe disposal of radioactive wastes. Aid in the planning and execution of field surveys to find the extent and intensity of radioactive all out and to devise suitable methods for the disposal of radioactive wastes.

These are new, complex, and interrelated environmental problems. Their adequate economic solution may well influence the rate at which the new nuclear industry can develop and the, as yet, undetermined benefits of the peaceful use of atomic energy can benefit the peoples of the world.

Water Supply - Explore all available water resources, create new methods aimed at conserving, by a regional basis of planning, water resources now subjected to wasteful local exploitation. Participate in basic research to discover new methods of water treatment to remove chemical and radioactive contaminants. Assist in the development and management of facilities for the collection, storage, treatment and distribution, of water for our growing population and industrial demands.

The supply of usable water is becoming increasingly scarce. The growing demands make the conservation and economic use of this natural resource one of the most urgent problems of modern times. Considered on the basis of weight the daily distribution of water exceeds by more than seven times the weight of daily output of all our industries. Present day studies show that our total water use by 1975 will be about 450,000,000,000 gallons daily. Investment needs for water facilities is placed at $1,000,000,000 each year for a period of twenty years.

Food Supply - Supervice, with the aid of food technologists, the development of new processing and vending equipment. Standardize procedures to establish the critical time-temperature relationships for safe harvesting, processing, transportation and storage of perishable foods. Study the pollution and purification of shell fish in aquatic environments. Devise methods for detection and control of specific microbic and toxic contaminants.

Land Use and Housing - Work with urban and rural planners to provide master regional plans for the most economic utilization of land and other natural resources. Study of community ecology to provide effective long term results, considering all the factors and their interrelationship which together establish the quality of the environment. Design facilities for water supply, waste collection and air pollution control.

This concept of overall study of land area classification to determine its most economic use is a relatively new approach. It has developed because of the urgent need for a clearer understanding of the increasing rate of urban expansion and the complex environmental problems which result. This is a problem of national concern and is currently termed "the explosion of our cities".

Wastes - Engage in study and research to evaluate the characteristics of the atmosphere, of inland and coastal waters as a media for the disposal of gaseous and liquid wastes; the ecology of inland and coastal wastes to determine their capacity to stabilize pollutants; the limitations of pollutional level relative to the designated use of inland streams and coastal waters; relationship between air pollution and gaseous wastes. Plan and design facilities for the treatment and safe disposal of both radioactive and non-radioactive gaseous, liquid and solid wastes produced by communities and industrial activity.

Water pollution control effort is not at present keeping pace with population increase and industrial growth. On a national basis, surveys show that present needed facilities would cost about $4, 000, 000, 000. To keep pace with our expanding economy new construction at the rate of $1, 200, 000, 000 annually is necessary.

Design - Determine the kind, layout, size and capacity of various types of equipment. Prepare plans and specifications for public facilities such as water treatment plants, waste water treatment plants, incinerators, food processing plants - sanitation facilities for buildings, and various types of public transportation.

Planning and Administration - Supervise engineering projects for industry, and government agencies on local, state and national levels. Determine policies by which projects are planned and carried out.

These activities stress engineering background, skill in human relations, and ability in business.

THE INFLUENCE OF UNSHADED WINDOW AREA ON THE CHOICE OF PERIPHERAL AIR-CONDITIONING SYSTEMS

BY ALFRED L. JAROS, Jr. of Jaros, Baum & Bolles, N.Y.

An address delivered on September 27, 1960
Before the American Society of Heating, Refrigerating and Air-Conditioning Engineers

1. Most of you are probably well aware that the size, type, and direction (faced by) windows plays a most important part in determining the AMOUNT of cooling needed for a particular space -- but it is less well-known that the ratio of Solar Radiation (entering through windows) to total sensible-cooling demand governs the relative economy and convenience (and hence the logical choice) of the several air-conditioning SCHEMES that may be employed. This is the subject of our talk.

2. To start from a definite basis, let us consider the quantities computed for the South Peripheral Zone of a typical office-building. Three sets of examples have been tabulated, differing only in the Percentage (of glass to total facade) and in the types of glazing and shading (if any). The results, which cover pretty well the "spread" from the smallest to the largest practical windows, are:-

3. ASSUMPTIONS:

Outdoor Condition, 95° DB, 75° WB.
Indoor Condition, 75° DB, 50% RH.
South Exposure, August mid-day.

(Note: 8:00 A.M. East, 4 P.M. West, or October and November Noon South, will increase solar inputs about 60%)

Persons, One per 100 Sq. Ft. (Light Activity).
Electric Usage (Lights, etc.) 5-1/2 Watts/Sq. Ft.
Wall Construction, 12 ft. floor-to-floor, "U" = 0.3
Ventilation, 0.4 cfm Outside Air/Sq. Ft. (75° WB to 64° WB)

4. COMPARISONS: (All per 1 foot width, extending 15 ft. deep Outside Zone)

Sensible Load, BTU per Hour

% Glass in Facade	25%		50%		75%	
Conduction, Single Glass		61		122		183
" Double "	* 30		* 61		* 91	
Wall		48		32		16
Occupants		35		35		35
Electrical Equipment		280		280		280
Total Sensible, Excluding Solar	*393	424	*408	469	*423	514
Solar, Unshaded, Plain Glass		306		612		918
" " Double Glass	*276		*552		*827	
" " Ht.-Ret. Glass		(224)		(448)		(672)
Total Sensible, Including Solar	669	730	960	1081	1250	1432
Solar, Inside Blinds, Plain Glass		171		342		513
" " " Double Glass	*147		*294		*440	
" " " Ht.-Ret. Glass		(168)		(346)		(504)
Total Sensible, Including Solar	540	595	702	814	863	1027
Solar, Outside Shading, Plain Glass		84		168		252
Total Sensible, Including Solar		508		637		766

Note:- Figures for Heat-Retarding glass have not been included in the "Total Sensible" summations.

5. CFM Circulated per Square Foot of Floor

% Glass in Facade	25%	50%	75%
(Unshaded) Plain Glass	2.7	4.0	5.3
" Double Glass	2.5	3.6	4.7
" Ht.-Ret. Glass	2.3	3.2	4.4
(Inside Blinds) Plain Glass	2.2	3.0	3.2
" " Double Glass	2.0	2.8	3.0
" " Ht.-Ret. Glass	2.2	3.0	3.2
(Outside Shading) Plain Glass	1.9	2.4	2.9

Note:- Above figures are at 25° F. temperature-difference, and would vary pro-rata at other temperatures.

6. Tons per 1000 Square Feet of Peripheral (South)-Zone, Including 32 BTU/Sq. Ft. for Latent Heat and Outside Air

% Glass in Facade	25%	50%	75%
(Unshaded) Plain Glass	6.00	7.45	9.65
" Double Glass	5.30	6.95	8.55
" Ht.-Ret. Glass	5.15	6.55	7.70
(Inside Blinds) Plain Glass	4.95	6.05	8.30
" " Double Glass	4.60	5.50	6.35
" " Ht.-Ret. Glass	4.75	5.90	6.60
(Outside Shading) Plain Glass	4.40	5.15	5.85

7. In passing, a number of conclusions can be drawn from the above tabulations:-

(a) The more "transparent" the glass is to solar radiation and conduction, the greater the saving to be realized by reducing window size.

(b) As an example, cutting the ratio of glass from 75% to 25% will -- for plain unshaded glass (the worst case) -- reduce the CFM by 49% and the total tons by 37%; for (completely) outside-shaded glass (the best case), these reductions are 35% and 25% respectively.

(c) Heat-Retarding glasses are valuable for exposed windows (15% reduction in CFM, -- 10% or more reduction in total Tons); but with efficient shading, their effect is negligible -- because you cannot stop The Same BTU's TWICE!

(d) Double glass (like Heat-Retarding glass) may be worth-while if it has to be unshaded -- but is of little use (in Summer) if it can be properly shaded.

(e) Venetian Blinds (or their equivalent in good Drapes) will reduce CFM by 20% to 40% (depending on the percentage of glass), -- and Tons by 10 to 20%; -- but really effective Outside Shading is Better (30 to 45% reduction in CFM, and 20 to 35% reduction in Tons -- in the example studied).

8. To appreciate the bearing of such comparisons on the TYPE of system to be used, some description of possible systems -- suitable for Peripheral Zones -- (and of the considerations which govern them) seems advisable.

9. But, first it should be clearly understood that Heat Gain due to Solar Radiation is one of the *largest variable* factors. In a typical office building, the "maximum simultaneous cooling demand" will subdivide about as follows:-

(a)	People, Lights, Office Equipment	37%
(b)	Conduction (through walls and roofs)	1%
(c)	Conduction and Solar Radiation (through windows)	27%
(d)	Dehumidification of outdoor-air supply	24%
(e)	Miscellaneous (including heat from fans)	11%

This for a building whose windows approximate 40% of the facade areas, *with* venetian blinds. Consequently, one of the most "available" ways to save in the cost of air-conditioning (and still have an adequate, efficient, and satisfactory plant) is to *keep the sun out* of the windows -- *entirely* -- (if that is possible) -- or as nearly so as other considerations will permit. This is a common practice in the Tropics (probably because it was even more necessary -- there -- during the centuries *before* air-conditioning was developed). But our habits, municipal building laws in some cases, and the usual architectural concepts of our builders (in the U.S.A.) have quite generally accomplished little of any such shading in our typical large air-conditioned buildings -- and substantial savings could be had by a change in our practices.

10. Various methods of outside shading compare as follows:-

(a) The old-fashioned canvas awning (on the outside of the building) could do more to reduce cooling demand, than any use of heat-absorbing glass, venetian blinds, or other *inside* shades.

(b) The performance of such awnings could be further improved by making them light in color on the outside, and by providing a ventilating "slot" at the top of each awning. The light color would *reflect* more of the sun's rays outward -- and the ventilating slot would permit hot air to escape (from under the awning), instead of increasing heat-*conduction* through the window.

(c) Modern types of ventilating awnings, built of aluminum or plastics, will do as well as the canvas awning.

(d) Unfortunately, all of these (as well as the old-fashioned wooden-slat "Shutter" outside of the window -- also quite effective) suffer from a common and grave defect -- they must be "manipulated", perhaps at several hundred distinct points in a building -- and to do this the windows must be opened and closed. Because of this nuisance, all of these "old" methods have largely fallen into disuse.

(e) Our usual substitutes are *inside* venetian blinds, reflective drapes, and the like, -- better than nothing, but definitely worse than *outside* shading.

(f) On orientations where the sun is quite *high* in the sky (in the Northern hemisphere, the South facade, -- and in the Southern hemisphere, the North facade), projecting balconies (or cornices) could be arranged to do as effective a job as any sort of awning. However, this method of shading is less useful on Easterly exposures, and almost useless on Westerly exposures -- because the Solar heat-radiation is greatest (on a West window) late in the afternoon, as the sun gets low in the sky.

(g) For these directions, the best shading methods are fixed (or movable) metal or concrete "jalousies", several feet out from the building (which introduces a serious problem in supporting them, unless projecting vertical "fins" are used for this purpose) -- or various schemes of vertical fins (either fixed a little way out from the windows, or pivoted so that their angulation can be adjusted to the changing direction of the sun's rays).

(h) The latter method is especially valuable on exposures somewhat to the South of true East or West; the diagonal spaces between such louvres should then look Northward rather than Southward.

11. Each building -- and to some extent each different facade (depending on its orientations) -- deserves special study for the best results; in different cases, various combinations of these methods work out best. It will require rather bold initiative -- and perhaps an "adventurous outlook" -- on the part of the Architect (and, of course, the cooperation of the Builder and Owners in accepting such design), to secure all the saving which Solar Shading can provide.

12. AIR DISTRIBUTION SCHEMES - While a detailed discussion of air-conditioning Systems is outside the scope of this Paper, it is necessary to point out that nearly all buildings require "Zoning"; they must have systems so arranged that the amount of heating or cooling effect can be independently controlled in the several (differently oriented) Peripheral Zones, separately from the Interior Zone. The need to do this, and as economically as possible, has largely dictated the development of:-

(a) Subdivided "Conventional" Systems - Sometimes used for new buildings -- but more applicable to old ones; subdivision of "conventional" systems (each caring for one floor, or at most two or three floors) into several separate "zones", selected as to exposure to sunshine, wind, and the like.

(b) Peripheral Systems (widely used). The "peripheral" zones (areas extending about 15 feet "inward" from the windows) are cooled or heated by means of compact local "units", located in metal cabinets under the windows (or in a continuous metal sill construction). Each unit circulates, locally, as much "conditioned air" as will serve the "peripheral zone" space bounded by one window; -- while the "inner" zones of the building are conditioned by separate ducted-air supply systems. On one widely-used method, the units under the windows receive "primary" air (about 25% of the total to be circulated in the room) -- from a remote fan-room, through small high-velocity "conduit" ducts -- usually run vertically near each outside-wall column. The primary (largely or entirely outdoor) air is filtered, cooled and dehumidified as necessary (or heated in Winter), and delivered at considerable pressure to the acoustically-baffled under-window units -- where (by means of ejector-nozzles) it "aspirates" or "induces" several times its own volume of air (from the room into the unit), mixes with it -- and delivers the mixture back into the room in such a manner as to give good local distribution. The aspirated room-air passes through a finned-coil in the unit, and is cooled in Summer (or heated in Winter) by water circulated from a piping system connecting to each unit, and distributed much as is the primary-air ductwork.

(c) Another somewhat similar scheme uses small motor-driven fans (in the units) to handle the recirculated "room-air" -- while the primary air may either enter the unit (at lower pressure) for "mixing" -- or more usually is delivered to the room through separate outlets.

(d) Double-Duct Systems - A single "central" High-Pressure system utilizes two supply ducts, with air at two different temperatures (one very low, the other moderately high). Mixing-dampers -- thermostatically controlled -- deliver the correct temperature of air to the "control-box" supplying the outlets for each individual zone (or room). This system gives excellent control, and is applied to mixing-boxes under windows, usually for peripheral zones. It requires larger ducts than peripheral systems, and larger fan-room equipment -- but eliminates the water-piping distribution.

(e) Radiant Heating and Cooling by the circulation of cooled (in Summer) water through coils, which extract heat from an aluminum ceiling, attached under the coils, and exposed to the room to be thus cooled. The same equipment gives very effective Winter heating (by warming the circulated water). To absorb heat, the ceiling must be appreciably colder than the air (or than other "surfaces" in the room). For example, a suitable surface, about 15 deg. F. cooler than the room-air, will absorb 20 to 25 BTU/Hr./Sq. Ft. of "sensible" heat. It will be recognized that this is just about the "differential" between typical "inside" and "outside" zone demands, if windows are smaller than 25% of the facade (or else very well shaded). Such a scheme permits a large reduction in the amount of conditioned-air required -- and usually makes it possible to combine Outside and Inside zones into a single system of fans and ducts, supplemented by small convectors or radiant panels under windows (for Winter use only); with room and "zone control" obtained entirely by means of the water supplied to the radiant ceiling.

13. INSTALLATION COSTS - The installation (and operating) costs of air-conditioning buildings of the multi-story type logically -- necessarily a major factor in selecting the design -- falls under three main heads:-

(a) "Central Refrigerating Plant" - Refrigerating machines and accessories, cooling-towers (or other source of condensing effect), condensing-water and chilled-water piping and pumps, steam, drain and fresh-water connections (also thermal insulation and acoustic and vibration protection). These may vary between $400. and $550. per "Ton", including piping -- depending on location and type of plant.

(b) "Floor" Work or "Distributing Systems" - Fans and drives, cooling and heating coils and connections, ducts, filters, outlets, automatic controls, exhaust ventilation, pipe connections (also thermal and acoustic insulation).

(c) "Other Trades" - Electric power supply and wiring for the central plant, foundations, supports for cooling-towers, and the like.

14. Items (a) and (c), logically, lie outside the scope of this paper -- except to stress that both installation and operating costs (for a given type of central plant) will vary about in proportion to Tons (of Refrigeration). See final Table in Paragraph 6.

15. For a multi-story office building, under typical Metropolitan conditions, an attempt has been made to analyze the cost of installation for five schemes, (tabulated below) as affected by relative proportion of sensible-heat load from windows:-

I. A double-duct ("all-air") system, with mixing boxes under windows for peripheral zones, plus a "single-duct" system for inside zones.

II. Metal radiant ceilings for cooling and heating peripheral zones, plus a single-duct system for all parts of the floor.

III. Fan-Coil-type units under windows for peripheral zones, plus a single-duct system for interior zones.

IV. Induction type units under windows for peripheral zones, plus a single-duct system for interior zones.

V. Single-duct systems ("all-air") separately zoned for interior and for the (several) exterior zones, plus heating convectors under windows. Such systems may involve fan-rooms on each floor, especially in alterations of existing buildings.

16. Based upon a 30-story building, about 300' x 80' in plan (principal exposures North and South), peripheral zone areas amounted to about 10,000 sq. ft., net, per floor -- and the cost estimates (worked-up for the five systems considered) added-up to the following "unit" costs and capacities (for each 1000 sq. ft. of peripheral zone area):-

Per Net 1000 Sq. Ft.	% Glass	I Double Duct	II Radiant Ceiling	III Fan-Coil Units	IV Induction Units	V Single Duct
H,V, AC, Eq't.	25	$4300.	$4300.	$4000.	$4350.	$3250.
Ele, Pb., Misc.	"	1000.	600.	1350.	700.	1050.
Total Cost	"	$5300.	$4900.	$5350.	$5050.	$4300.
Tons Refrigeration	"	4.3	4.0	4.0	4.0	4.3
Ducted CFM (S&R)	"	4500	1700	600	650	3400
"Supply" CFM/Ton	"	680	240	100	115	420
Total Cost per Ton	"	$1235.	$1225.	$1338.	$1262.	$1000.
H,V, AC, Eq't.	50	$5100.	$5100.	$4200.	$4550.	$3700.
Ele, Pb., Misc.	"	1200.	700.	1400.	800.	1200.
Total Cost	"	$6300.	$5800.	$5600.	$5350.	$4900.
Tons Refrigeration	"	5.7	5.2	5.2	5.2	5.7
Ducted CFM (S&R)	"	6000	3000	600	1000	4500
"Supply" CFM/Ton	"	700	320	77	120	435
Total Cost per Ton	"	$1100.	$1110.	$1075.	$1025.	$ 865.
H,V, AC, Eq't.	75	$5900.	$5500.	$4900.	$5000.	$4250.
Ele, Pb., Misc.	"	1400.	900.	1500.	900.	1350.
Total Cost	"	$7300.	$6400.	$6100.	$5900.	$5600.
Tons Refrigeration	"	7.4	6.8	6.8	6.8	7.4
Ducted CFM (S&R)	"	7600	3800	600	1250	5700
"Supply" CFM/Ton	"	690	300	59	114	430
Total Cost per Ton	"	$ 985.	$ 940.	$ 900.	$ 870.	$ 760.

Note A. Double-duct CFM includes 100% "cold-deck" and 60% "hot-deck".
" B. Radiant Ceiling costs have been "credited" with value of standard acoustic ceiling.
" C. It must be understood that these figures will vary with each proportion and orientation of buildings, as well as with locality and quality; they should be considered comparative, only.

17. Outside air (brought in for ventilation) was taken at 0.4 CFM/sq. ft.; outside conditions at 95° F. DB & 75° F. WB; inside conditions at 75° F. & 50% R.H. Under these conditions the Interior Zone net area was about 8000 sq. ft. per floor (not including "core"), and its (separate) air-handling system (1.0 CFM total air per sq. ft.) figured about $1500. for HVAC, and $400. for Pbg., Elec., & C., per 1000 sq. ft. None of the figures just tabulated include the central refrigerating plant -- whose cost will be independent of the type of air-handling system. All costs were based on good design (for the type of system), good materials, and good installation, as well as the use of ample insulation, acoustic treatment, and automatic controls (the one exception being system V, which includes only control for whole zones, not for individual rooms or bays).

18. CONCLUSIONS - Perusal of the table brings out clearly that:-

(a) As might be expected, System V (the least effective and least controlled) is the least costly to install (with each proportion of window area) -- a factor which may be offset, in practice, by its heavy "demand" for duct and equipment spaces.

(b) Of the other four systems, the cheapest are those with peripheral units -- when window areas are materially in excess of 25%. Induction unit systems are a little more economical, in the "overall", than fan-coil units -- chiefly because of the heavy wiring and plumbing (drainage) costs required for the latter.

(c) The Radiant Ceiling scheme -- which is distinctly more costly with the larger windows -- becomes the least costly scheme when windows are smaller than 25%. This is because the relatively high cost of the ceiling panels is then more than offset by the small capacity and simplicity of the air-handling system which supplements it (and which grows rapidly in size and complexity with larger windows).

(d) With large windows, double-duct systems are decidedly the most costly. Due to rapid shrinkage of air-quantities, duct & fan sizes, they become competitive at about 25% window sizes, and for still smaller than this, have proved even less costly, sometimes, than an induction system.

19. These comparisons have been borne out by actual experience. In one case (with 20% windows only), a double-duct system of good design was installed for about $50,000. less than the lowest bid received for a comparable peripheral unit system. A bid was also taken -- in this case -- on a radiant ceiling panel system, and was lower even than for the double-duct system (which the owners, however, preferred to install).

20. In closing, may I remind you that the comparisons -- based on inside venetian blinds -- really relate to "room sensible" load. If the use of effective outside shading reduces the latter to as great (or greater) extent -- with larger windows -- as with venetian blinds and small windows, similar results would follow. In a tropical city (with over 100° F. design temperature and high humidity) radiant ceilings have been proved cheaper than peripheral units, solely because the Architect provided almost perfect outside shading for the 55% windows. By comparison, in our typical New York buildings, peripheral units nearly always prove the less costly (except with very small windows).

THE FINE ART OF ARCHITECTURAL DECEPTION

From "The Straight Edge" Central New York Chapter,
AIA and AIA Journal - JOSAM NEWS DIGEST

In these days of articles which are made to be sold but not to be used, when doctors pass out tranquilizers, wrestlers grunt and groan, public officials tell us how well everything is going, and show business keeps the brass-plating industry busy turning out trophies, what is the profession of architecture doing to keep up with the rest of the world? Are we getting into the act? Are architects meeting the needs of their clients squarely, or just kidding them along? We all know what a complete and conscientious service the profession is giving, but how much easier it would be just to fool the public the way other people do!

This is an age of specialization, and who would dare to question or criticize the high priest of architecture? Architects don't even criticize each other. (They know how but refrain because of ethics.) They should be able to convince the client of almost anything when they turn on the charm!

Sketches of Avila, Segovia and Salamanca on this page and page 44 are by Lloyd Guy Walter, Jr., 1960 Lloyd Warren Fellow, 47th Paris Prize in Architecture.

Suppose people were to form their impressions and opinions of architecture by looking at photographs in magazines, for example. Who knows what the plans are like? Who knows, who cares what the building is used for as long as it is photogenic? Isn't the photographer the architect's best friend? When the walls are too dark and the sky is light he can just put on a red filter - the picture will show the walls glowing softly against a coal-black sky. The administration wing is more attractive than the sixty acre machine shop behind it; move up close with the wide-angle lens and the shop will hardly show at all. Better yet, have a few professional models on hand to pose in front of the entrance, to give it the proper scale.

Since architecture is considered a fine art, rendered perspectives are prepared for the better classes of buildings, The client, who is after all just a layman, is thus able to "visualize" the design without being distracted by all of the mean little details that might worry a realist. The delineator can choose a stationpoint that is not too commonplace, or even one which is not accessible and at the same time improve the apparent proportions of the projected building.

The pseudo-intellectual demands more argument for his money, however, and needs to be convinced by carefully chosen sophisms of theories of an intricate nature - the more intricate the better. Explanations of how the form of every detail follows some obscure function are particularly effective He will be delighted to learn that the building you are planning for him will be fresh, clean, friendly, honest, flexible and organic. He is a sucker for familiar platitudes like "a building should express its owner's personality" "happy buildings make for happy people," "space should flow around the interior, the inside out and the outside in," "the first cost is the last cost" and "nothing is too good for the public."

Segovia Alcazar
November 1960

LGW

Salamanca Iglesia San Esteban
November 1960

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